Space Weather Forecast

Issued on Thursday, 06 October 2022 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: G1/Minor storms possible throughout. Ongoing likelihood of Moderate flares with slight chance of isolated Strong flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low with no significant flare activity. A region which has been the source of much of the recent activity is approaching the northwest limb and is rotating out of view. A large region close to centre disc provides much of the flare risk, but continues to be inactive. The remaining five regions are all relatively simple and inactive. A CME (coronal mass ejection) which left the southwest on 05 October has been analysed in the last 24 hours, with modelling suggesting that this will clearly miss the Earth.

Solar Wind / Geomagnetic Activity: Solar wind speeds have been elevated, due to a fast solar wind, but have recently started to decline back to background levels. Total magnetic field strength was mainly weak, but spiked at moderate levels for a time towards the end of the period, due to the passage of a weak CME. The north-south component was also generally weak, but spiked to near moderate levels at around the same time. Geomagnetic activity was Quiet to Active (Kp 2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has been at background levels, with no solar proton storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be mainly Low, with occasional Moderate activity and a slight chance of High activity.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 04 October is forecast to arrive at Earth late on 06 October, with low confidence due to limited imagery available for analysis. Otherwise the current fast solar wind is forecast to decline during 06 and 07 October. A further fast solar wind is then expected to connect with the Earth on 08 October. Geomagnetic activity is expected to start Quiet to Unsettled with isolated Active intervals. G1/Minor Storms are then possible from late on 06 and through 07 October, with activity perhaps easing later. A further risk of G1/Minor storms on 08 October due to the onset of the next fast solar wind.

Energetic Particles / Solar Radiation: The count rate of energetic particles is expected to be near or at background but with a chance of rising at times due to any further flaring from the notable sunspots. This giving a slight chance of exceeding minor proton storm threshold..

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	20	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	60	50	50	50
Very Active	R3 to R5 X	No	15	15	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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